

GOVERNMENT OF INDIA  
TARIFF COMMISSION



REPORT  
ON THE जयते  
CONTINUANCE OF PROTECTION  
TO THE  
ELECTRIC MOTOR INDUSTRY

BOMBAY,  
1955

GOVERNMENT OF INDIA  
T A R I F F C O M M I S S I O N



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## PERSONNEL OF THE COMMISSION

Shri M. D. Bhat	...	...	Chairman
Shri B. N. Adarkar, M.A. (Cantab.)			Member
Shri B. N. Das Gupta, B.A., A.S.A.A. (London), F.C.A.	...	...	Member
Shri C. Ramsubban	...	...	Member
Shri S. K. Bose, M.A., I.A.S.	...		Secretary

## PERSONNEL OF THE PANEL WHICH HEARD THE CASE

Shri M. D. Bhat	..	Chairman
Shri B. N. Das Gupta	..	Member
Shri C. Ramasubban		Member



सत्यमेव जयते

GOVERNMENT OF INDIA  
MINISTRY OF COMMERCE AND INDUSTRY  
R E S O L U T I O N

TARIFFS

*New Delhi, the 7th September 1955*

**No. 11(1)-T.B./55.**—The Tariff Commission has submitted its Report on the continuance of protection to the Electric Motor Industry on the basis of an enquiry undertaken by it under Sections 11(e) and 13 of the Tariff Commission Act, 1951. Its recommendations are as follows:—

- (1) Protection to the industry should be continued for a further period of three years, that is up to 31st December, 1958, and protective duty at the rate of 15 per cent *ad valorem* should be levied on imports of squirrel cage induction motors of brake-horse-power not exceeding 100 but not less than one quarter of one brake-horse-power and slips ring motors of brake-horse-power not exceeding 100 but not less than one brake-horse-power: excluding flame proof motors and variable speed commutator motors.
- (2) Protective duty should be levied at the rate of 20 per cent *ad valorem* for a further period of three years, i.e. upto 31st December, 1958, on component parts of electric motors specified in (1) above, but excluding control gear for the same, provided that only such articles should be deemed to be component parts as are essential for the working of the electric motors and have been given for that purpose some special shape or quality which would not be essential for their use for any other purpose.
- (3) So long as import control has to be maintained on balance of payments grounds. Government should give due consideration to such factors as the capacity of the indigenous industry, its production and the demand in the country in regulating imports of electric motors.
- (4) Government should arrange with the Collectors of Customs and the Director General of Commercial Intelli-

gence and Statistics to record separately the total number and value of electric motors under each of the following categories:—

- (i) Squirrel cage induction motors less than 1 b.h.p.
  - (ii) Squirrel cage induction motors of 1 to 50 b.h.p.
  - (iii) Squirrel cage induction motors of 51 to 100 b.h.p.
  - (iv) Squirrel cage induction motors of 101 to 200 b.h.p.
  - (v) Squirrel cage induction motors above 200 b.h.p.
  - (vi) Slip ring motors of 1 to 50 b.h.p.
  - (vii) Slip ring motors of 51 to 100 b.h.p.
  - (viii) Slip ring motors of 101 to 200 b.h.p.
  - (ix) Slip ring motors above 200 b.h.p.
  - (x) All other fractional H.P. motors below 1 H.P. not covered by the above classification.
  - (xi) All other motors of integral H.P. not covered by the above classification.
- (5) The Indian Standards Institution should consider the feasibility of evolving dimensional standards for electric motors suitable for conditions in India as early as possible.
  - (6) To enable manufacturers of electric motors to satisfy the purchasers regarding the quality of motors, we recommend that facilities should be provided by Government for type testing as well as testing under actual working conditions and for issue of certificates embodying the results of testing by the institute carrying out such tests.
  - (7) Arrangements for testing flame proof motors should be made by Government at the Fuel Research Institute, Dhanbad, or at any other suitable place as early as possible.
  - (8) Import of synthetic enamelled wire should be allowed until semi-synthetic enamelled wire produced in the country has been tested and found satisfactory by the electric motor industry.
  - (9) Imports of special types of varnishes should be allowed until such types are developed by indigenous manufacturers.

- (10) Manufacturers of electric motors should obtain all their requirements of ball and rollerbearings from National Bearing Company, Ltd., and only when the latter are unable to supply bearings of any size required by the manufacturers within a reasonable period, they should apply for licences to import them.
- (11) Since some of the manufacturers of electric motors have already been producing slip rings in the country, we suggest that efforts should be made by other manufacturers to obtain their supplies of slip rings from indigenous sources.
- (12) Efforts should be made by paint and varnish manufacturers in India to produce the enamel base required for synthetic enamelled wire.
- (13) Sankey Electrical Stampings, Ltd., Bombay, should examine further the suggestion that they should charge prices for electrical stampings on the basis of the actual wastage incurred in making stampings required by an electric motor manufacturing firm for each order placed by it, and that if there are no serious difficulties, a trial should be given to this method of charging prices for stampings.
- (14) Tata Iron and Steel Company Ltd., should re-examine the question of price of their electrical steel sheets and make them available to the electric motor industry at the lowest possible price.
- (15) The quality of indigenous motors is generally satisfactory but special care is necessary in the manufacture of electric motors which are required for heavy duty or for work in special atmospheric, and other conditions.
- (16) The Indian Electrical Manufacturers' Association should get in touch with Association of Textile Mills, etc., and arrange with them for supply of indigenous motors in cases in which foreign motors need not be imported as integral parts of machinery.
- (17) It is essential that the industries using electric motors should specifically state their requirements (including special conditions in which motors have to work) to the indigenous manufacturers and that the latter

should take care to remove all defects and exercise strict supervision at every stage of manufacture and carry out adequate tests before motors leave the factory.

2. Government accept recommendations (1) and (2). The protective duty of 15 per cent *ad valorem* on the electric motors referred to is being brought into force with immediate effect and further steps to implement these recommendations will be taken in due course.

3. Government accept recommendations (3) to (9) and will take suitable steps to implement them as far as possible.

4. The attention of the Industry is invited to recommendations (10) and (15).

5. Attention of Messrs. Sankey Electrical Stampings, Ltd., Bombay, Tata Iron and Steel Company Ltd., and Indian Electrical Manufacturers' Association is invited to recommendations (13), (14) and (16), respectively.

6. Attention of the manufacturers of paints and varnishes is invited to recommendation (12).

7. Attention of the industries using electric motors and of manufacturers of electric motors is invited to recommendation (17).

#### ORDER

Ordered that a copy of the Resolution be communicated to all concerned and that it be published in the Gazette of India.

L. K. JHA,

*Joint Secretary to the Government of India.*



GOVERNMENT OF INDIA  
MINISTRY OF COMMERCE AND INDUSTRY.  
NOTIFICATION

TARIFFS

*New Delhi, the 7th September, 1955.*

**No. 11(1)-T.B./55.**—WHEREAS the Central Government is satisfied after due enquiry that the duty chargeable under the Indian Tariff Act, 1934 (XXXII of 1934), in respect of the article specified in Item No. 72 (14) (a) of the First Schedule to the said Act, and characterised as protective in the third column thereof, has become ineffective for the purpose of securing the protection intended to be afforded by it to similar articles manufactured in India;

NOW THEREFORE, in exercise of the powers conferred by sub-section (1) of section 4 of the said Act, as in force in India and as applied to the State of Pondicherry, the Central Government hereby increases, with effect from the 7th September, 1955, the duty of customs on the said article so that the duty chargeable shall from the said date be as specified in column 3 of the table annexed hereto.

THE TABLE

Item No. of Tariff	Name of Article	Rate of duty
1	2	3
72 (14) (a).	The following electric motors, namely, squirrel cage induction motors of a brake-horse-power not exceeding 20 including fractional brake-horse-power.	15 per cent ad valorem.

L. K. JHA,  
*Joint Secretary to the Government of India.*

GOVERNMENT OF INDIA  
MINISTRY OF COMMERCE AND INDUSTRY  
NOTIFICATION

TARIFFS

New Delhi, the 7th September, 1955.

**No. 11(1)-T.B./55.**—In exercise of the powers conferred by sub-section (1) of section 3A of the Indian Tariff Act, 1934 (XXXII of 1934), as in force in India and as applied to the State of Pondicherry, the Central Government hereby directs that with immediate effect there shall be levied on the articles specified in column (1) of the Table hereto annexed, when imported into India or the said State, a duty of customs of such amount as is specified in the corresponding entry in column (2) thereof.

THE TABLE

Name of articles	Amount of duty of customs (inclusive of the duty chargeable under sub-section (1) of section 2 of the Indian Tariff Act, 1934, and any additional duty leavable under any other law for the time being in force.
1	2
(a) The following electric motors, namely, squirrel cage induction motors of a brake-horse-power above 20 and upto and inclusive of 100 and slip ring motors of brake-horse-power ranging from 1 to 100 inclusive, but excluding flame proof motors and variable speed commutator motors.	15 per cent. <i>ad valorem</i> .
(b) Component parts of electric motors as defined in (a) above but excluding control gear for the same, provided that only such articles shall be deemed to be component parts as are essential for the working of the electric motors and have been given for that purpose some special shape or quality which would not be essential for their use for any other purpose.	20 per cent. <i>ad valorem</i> .

L. K. JHA,  
Joint Secretary to the Government of India.

## TO THE ELECTRIC MOTOR INDUSTRY

### REPORT ON THE CONTINUANCE OF PROTECTION

**1.1. Previous tariff inquiries.**—The first inquiry into the claim of the electric motor industry to protection was held by the Tariff Board in 1946-47 in pursuance of the Government of India, Department of Commerce, Resolution No. 218-T(55)/45, dated 13th July, 1946, read with paragraphs 2 and 7 of Resolution No. 218-T(55)/45, dated 3rd November, 1945. In its report submitted on 26th May, 1947, the Tariff Board recommended that the revenue duty of 10 per cent. *ad valorem* on electric motors should be converted into protective duty at the same rate and that the protective duty should remain in force till 31st March, 1950. This recommendation was accepted by the Government of India in the Ministry of Commerce by their Resolution No. 218-T/B(4)/47, dated 12th April, 1948.

**1.2.** The Tariff Board was asked by the Government of India in the Ministry of Commerce by their letter No. 2-T(2)/49, dated 28th January, 1949, to conduct a fresh inquiry into the electric motor industry. The Tariff Board in its report submitted on 30th September, 1949, recommended that a protective duty of 15 per cent. *ad valorem*, should be levied for three years on imports of electric motors up to 20 horse power (hereafter described as h.p.) as well as on component parts of such motors as had been given a special shape or size for the purpose. The Government of India in the Ministry of Commerce by their Resolution No. 11 (2)TB/49 dated 4th February, 1950, accepted the recommendation that protection should be extended up to 31st March, 1953, but did not consider it necessary to increase the duty from 10 to 15 per cent. Government, however, stated that the position would be reviewed as and when necessary. Subsequently, in consultation with the Tariff Commission necessary legislation was introduced by Government in Parliament and protection was extended up to 31st December, 1955, by the Indian Tariff (Amendment) Acts.

**2. Present inquiry.**—The present inquiry was undertaken by the Tariff Commission under Section 11 (e), read with Section 13 of the Tariff Commission Act, 1951, under which the Commission is empowered to inquire into and report on any further action required in relation to the protection granted to an industry with a view to its increase, decrease, modification or abolition according to the circumstances of the case.

**3.1. Method of inquiry.**—On 26th May, 1954, the Commission issued a press note inviting persons, bodies and associations interested in

the electric motor industry or in the industries dependent upon the use of electric motors to obtain copies of relevant questionnaires from the office of the Commission and to submit replies thereto. Questionnaires were also issued to known producers, importers and consumers. A list of persons, associations and firms to whom questionnaires were issued and from whom replies were received is given in Appendix I. The Director General of Supplies and Disposals was requested to state his views on the desirability of continuing protection and the quality of electric motors produced in the country. The Development Wing of the Ministry of Commerce and Industry was addressed for furnishing a memorandum on the various aspects of the industry. Information regarding c.i.f. prices, clearing charges, landed costs, etc., of electric motors was obtained from the Collectors of Customs and some of the leading importers. The Directors of Industries, Bombay, West Bengal, East Punjab, Madras and Mysore States were requested to submit memoranda on the progress of the electric motor industry in their respective States after orders were issued by Government in February 1950, on the Tariff Board's report of 1949.

3.2. Shri M. D. Bhat, Chairman, accompanied by Dr. Rama Varma, the then Secretary, visited the factories of Bharat Bijlee, Ltd., Bombay and Crompton Parkinson (Works), Ltd., Bombay, on 3rd and 4th December, 1954, respectively. He also visited the factories of Kirloskar Electric Company, Ltd., Bangalore, and Jyoti, Ltd., Baroda, on 6th January, 1955, and 15th February, 1955, respectively. Shri B. N. Das Gupta visited the factories of Electric Construction and Equipment Company, Ltd., Calcutta, and Associated Electrical Industries Manufacturing Company, Ltd., Calcutta, on 26th and 27th October, 1954, respectively. He also visited the factory of Kirloskar Electric Company, Ltd., Bangalore, and P.S.G. and Sons' Charity Industrial October, 1954, respectively. He also visited the factory of Kirloskar Electric Company, Ltd., Bangalore, on 6th January, 1955. Shri C. Institute, Argus Engineering Company, Ltd., and Eastern Electric Company, Ltd., Coimbatore, on 28th November, 1954, and 1st December, 1954, respectively. Shri M. D. Bhat, Chairman, Shri B. N. Das Gupta and Shri C. Ramasubban, Members accompanied by Shri P. N. Deobhakt, Deputy Development Officer, Development Wing, Ministry of Commerce and Industry, visited the factory of Sankey Electrical Stampings, Ltd., at Bhandup, on 24th December, 1954. Shri R. Sundaram, Cost Accounts Officer, visited the factories of Bharat Bijlee, Ltd., Bombay, on 20th October, 1954. Kirloskar Electric Company, Ltd., Bangalore, from 8th to 12th November, 1954, and Associated 10th to 16th January, 1955, and examined the cost of production of Electrical Industries Manufacturing Company, Ltd., Calcutta, from certain types of electric motors manufactured by them.

**3.3. Recommendations made by the Tariff Board in its reports of 1947 and 1949 on matters other than tariffs.**—A public inquiry into the electric motor industry was held on 21st and 22nd December, 1954. A list of those who attended the inquiry is given in Appendix II.

4.1.1. The Tariff Board in its report of 1947 made the following recommendations on matters other than tariffs.

(1) Electric motors are not shown separately in the Sea-Borne Trade Statistics or in the Indian Customs Tariff Schedule. In order to watch imports with particular reference to the types of motors made in India, a separate item in the Indian Customs Tariff Schedule should be shown as under:—

- (i) Squirrel cage induction motors 1 to 30 h.p.,
- (ii) slip ring motors 15 to 50 h.p.,
- (iii) fractional h.p. motors, and
- (iv) all other electric motors not covered by the above classification.

(2) The present import restrictions should be withdrawn as healthy competition from abroad is desirable to maintain and improve the quality of the Indian product.

imported in future should be refunded.

the Indian Tariff (Amendment) Act, 1948. The Director General of Commercial Intelligence and Statistics issued instructions to the Collectors of Customs that the figures of imports in value only should be separately recorded from January, 1949 in respect of the four categories mentioned above.

*Recommendation (2).*—Import restrictions were withdrawn by Government and electric motors of 30 h.p. and below were placed on O.G.L. XI and XII, thereby permitting their imports from Sweden and Switzerland.

*Recommendation (3).*—As regards the general question of remission of customs duty on imported industrial machinery, Government from 23rd October, 1948. This concession was applicable to electric motor manufacturing machinery.

decided to reduce the customs duty from 10 to 5 per cent. with effect

indicated below:—

Government and a new item No. 72 (14) was inserted in the Indian

4.1.2. These recommendations were implemented to the extent  
*Recommendation (1).*—This recommendation was accepted by

(3) Customs duty paid on electric motor manufacturing machinery

4.2.1. In its report of 1949, the Tariff Board made the following recommendations on matters other than tariffs.

(1) Continuance of the present ban on imports of electric steel sheets and stampings; licences for such imports being granted only in exceptional cases, if the required quantity and/or design could not be manufactured within the country.

(2) Restriction of imports into the country on motors up to 15 h.p. until the present stocks of such motors had been exhausted.

(3) Consequential amendment of item 72 (14) of the First Schedule to the Indian Customs Tariff.

(4) Compilation of statistics according to the following classifications—

- (i) Squirrel cage induction motors 1 to 20 brake-horse-power,
- (ii) squirrel cage induction motors 21 to 30 brake-horse-power.
- (iii) slip ring motors 15 to 50 brake-horse-power,
- (iv) fractional brake-horse-power motors, and
- (v) all other electric motors not covered by the above classification.

(5) Concerted action on the part of Tata Iron and Steel Company, Ltd., and Sankey Electrical Stampings, Ltd., to reduce the price of electrical sheets to a reasonable level.

(6) Standardisation of the size and design of laminations in each type of electric motors to be made, and also of windings, shaftings and ball bearings in consultation with the Indian Standards Institution.

(7) Reduction of the quantity of iron casting used to the minimum necessary for the efficient functioning of the motors.

(8) Exploration of the possibility of obtaining castings and copper conductors in the cheapest market and

(9) Manufacture of transformers, switch gear, pumping sets and similar articles, for which a portion of the same equipment and machinery as are required for electric motors can be utilised.

4.2.2. These recommendations were implemented to the extent indicated below:—

*Recommendations (1) and (2).*—Government agreed to consider them within the framework of their general import policy.

*Recommendations (3) and (4)*—They were accepted by Government and necessary action was taken.

*Recommendation (5)*—The attention of Tata Iron and Steel Company, Ltd., and Sankey Electrical Stampings, Ltd., was drawn to it.

The representative of Tata Iron and Steel Company, Ltd., stated at the public inquiry that after the inquiry by the Tariff Board in 1949, the price of electrical sheets was reduced by them from Rs. 734 to Rs. 710 per ton, but as costs of production had risen, they had raised the price to Rs. 796 per ton in 1953. The representative of Sankey Electrical Stampings, Ltd., who was present at the public inquiry stated that the price of electrical stampings in 1949 was Rs. 182 per cwt. while the current average price ranged between Rs. 169 and Rs. 174 per cwt. This question is discussed further in paragraph 9.2 below.

*Recommendation (6)*—The representative of Crompton Parkinson (Works), Ltd., who is a member of the Standards Committee of the Indian Standards Institution stated at the public inquiry that the standardisation which the Committee had been considering related only to certain dimensions of motors, for example, height of the shaft, etc. He further stated that the standardisation that had taken place in other countries was confined largely to dimensions. This question is discussed further in paragraph 10.6 below.

*Recommendations (7) and (8)*—We were informed at the public inquiry that the industry had adopted both these recommendations.

*Recommendation (9)*—The representative of Kirloskar Electric Company, Ltd., stated at the public inquiry that some of the manufacturers had started producing transformers and switch gear, but that it was not feasible to produce pumping sets in the same factory as these were two different lines.

**5.1. Scope of the inquiry.**—The Government of India in the Ministry of Commerce and Industry informed the Commission in their letter No. 11 (3)T.B./53, dated 1st June, 1954, that they had decided that the scope of the inquiry into the continuance of protection to the electric motor industry should be extended so as to cover electric motors of all types and ratings manufactured or likely to be manufactured in the country in the near future.

**5.2.** In their written memoranda, the manufacturers of electric motors informed us that they were producing at present squirrel cage induction motors, screen protected, drip proof, totally enclosed (fan cooled), vertical spindle, loom motors, slip ring, horizontal as well as vertical high torque low starting motors suitable for textile mills, multispindle motors, pump motors, flange and fractional

motors. The Indian Electrical Manufacturers' Association stated in its memorandum that the scope of the inquiry should be extended to 75 h.p. motors. At the public inquiry, the representative of Kirloskar Electric Company, Ltd., stated that the scope of the inquiry should include motors up to 150 h.p. The representative of Jyoti, Ltd., stated that they had already produced motors up to 300 h.p. and that they were confident that they could manufacture motors up to 500 h.p. He, therefore, suggested that the scope of the inquiry should include motors up to 200 h.p. The representatives of other manufacturers stated that the scope of the inquiry should include motors up to 100 h.p. From the evidence received by us it is clear that some of the manufacturers are in a position to produce motors up to 200 h.p., provided orders were placed with them for such motors. It was also pointed out that they were in a position to supply motors of 200 h.p. within a reasonable period. The general opinion, however, was that the scope of the inquiry should not extend to motors of more than 100 h.p. We are satisfied that there are some manufacturers who can produce motors of good quality of 200 and higher h.p. but as we have no information regarding the demand for motors above 30 h.p., we consider that it will be safe to confine the scope of the inquiry to motors of 100 h.p. and below, which indigenous manufacturers will be able to produce in sufficient quantities so as to meet the full requirements of the country in respect of such motors. As regards different types of motors, it was started by National Insulated Cable Company, Ltd., Calcutta, and were able to produce motors of all types and in fact some of them had already produced motors of many different types. It was suggested that the only types which should be excluded from the scope of the inquiry were (1) flame-proof motors, and (2) variable speed commutator motors. The representative of Bharat Bijlee, Ltd., stated that flame-proof motors could be produced in India, but as there were no adequate arrangements for testing such motors, no manufacturer was prepared to undertake their production. We understand that the proposal for providing facilities for testing flame-proof motors at the Fuel Research Institute, Dhanbad, is already under the consideration of Government. As flame-proof motors are required by oil companies, etc., and there is a good demand for them, we recommend that arrangements for testing such motors should be made by Government at the above institute or at any other suitable place as early as possible. As regards variable speed commutator motors, we were informed by the representative of the Development Wing of the Ministry of Commerce and Industry that there was no production or likelihood of production of such motors in the country in the near future. The question of component parts was also discussed at the public inquiry and the consensus of opinion was that all component parts except control gear, should be included within the scope of the



inquiry and that such articles should be considered as component parts as are essential for the working of electric motors of h.p. upto 100 and have been given special shape or quality for that purpose. Having regard to all these factors, we have decided that the scope of the inquiry should include squirrel cage induction motors of brake-horse-power not exceeding 100, including fractional brake-horse-power, slip ring motors of brake-horse-power not exceeding 100, but exclude flame-proof motors and variable speed commutator motors. The scope should also include all component parts of electric motors, but exclude control gear.

**6. Present position of the industry.**—At present there are 12 firms on the list of Government who are manufacturing electric motors. Of these, five have tie-ups with foreign manufacturers. This arrangement enables these units to obtain specifications, drawings and other technical details from their foreign associates. They also get the benefit of research organisations of their foreign associates. Besides these, three other firms are known to be manufacturing electric motors. Not only has production increased substantially since 1949, but the range has been considerably widened. Kirloskar Electric Company, Ltd., Bangalore, and Jyoti, Ltd., Baroda, have produced electric motors of 160 h.p. and 300 h.p. Special types of motors, such as dual speed motors, loom motors, spinning frame motors, vertical spindle and hollow shaft motors are also being produced by some of the manufacturers.

**7.1. Domestic demand.**—We have received only two estimates of demand from the manufacturers of electric motors. Jyoti, Ltd., Baroda, have estimated the consumption of squirrel cage and slip ring induction motors at 136,250 h.p. per year mainly by textiles, cement, steel, paper and chemical industries and for irrigation. General Electric Company of India (Manufacturing), Ltd., Calcutta, have estimated the consumption of electric motors in the country at 225,000 h.p. in 1955 and 250,000 h.p. in 1956. The other manufacturers have stated that it is not possible to assess the total demand as well as the demand for various types of electric motors. The Planning Commission in its Programmes of Industrial Development, 1951-56, has estimated the total requirements of A.C. 3 phase squirrel cage and slip ring induction motors up to 50 h.p. at about 320,000 h.p. by 1956, on the assumption that the generation of electricity will increase at the same rate as in 1951 and that industrial activity will keep pace with it. The Development Wing of the Ministry of Commerce and Industry has expressed its inability to estimate with any degree of accuracy the domestic demand for electric motors of various types. It has, however, stated that the future demand is bound to expand considerably and in the absence of reliable data,

the estimate made by the Planning Commission might be considered as reasonable.

7.2. It is possible to make an estimate of the domestic demand by taking into account the total production of electric motors in the country and imports of electric motors during the last 4 years. The total production of electric motors in the country in 1951, 1952, 1953 and 1954 was 147,892, 163,547, 162,667 and 186,643 h.p. respectively. The Director General of Commercial Intelligence and Statistics has been forwarding to us a statement showing the number and value of electric motors of specified types, imported in each month. On the basis of this information, we have prepared a statement showing the number and value of electric motors of specified types in each of the years 1951 to 1954 (September). This statement is given in Appendix III. On the assumption that the ratio of the total number of motors under each category to the total h.p. of production under the respective category would be more or less the same in the case of imports also, an estimate could be made of the total h.p. of imports in each of the four years, 1951, 1952, 1953 and 1954 and the average of the total h.p. of imports per year could be arrived at. But this would not give us a correct picture as it is difficult to believe that as many as 18,786 electric motors of 1 to 30 h.p. could have been imported in 1953 and 1954, when there was a ban on imports of motors of 1 to 30 h.p. Some motors of 1 to 30 h.p. might have been imported along with the machinery of which they formed an integral part but they could not have been included in the figures of imports given by the Director General of Commercial Intelligence and Statistics. The representative of the Customs Department, Bombay, who was present at the public inquiry stated that the figures furnished by the Customs Department, Bombay, to the Director General of Commercial Intelligence and Statistics included imports of single phase, flame-proof and geared motors along with motors imported as integral parts of machinery when they were imported separately. If we take the total value and number of slip ring motors of 15 to 50 h.p. imported in 1953 and 1954, we get an average value of Rs. 2,058 per motor for 1953 and Rs. 3,172 per motor for 1954. Similar discrepancy is noticed in the case of other types of motors also. We have taken up the matter regarding the correctness of the figures of imports of electric motors, supplied to us by the Director General of Commercial Intelligence and Statistics with him as well as the Collector of Customs, Bombay, but it appears that it will require a prolonged and detailed investigation before the figures of imports as available to us can be checked with the actual figures. From the investigation that we have made so far, we have come to the conclusion that it will not be safe to rely upon the figures of imports as furnished to us by the Director General of Commercial Intelligence and Statistics and to make an

estimate of the domestic demand on the basis of those figures and the total production in 1951, 1952, 1953 and 1954. It is, however, clear that production has been steadily increasing since 1950 and the trend is now towards production of motors of higher h.p.

7.3. In their letter No. 11(3)TB/53, dated 1st June, 1954, referred to in paragraph 5.1 above, Government have invited the attention of the Commission to the recommendation of the Planning Commission regarding electric motor industry in Chapter XIX of the Programmes of Industrial Development, 1951—56, and requested it to make an accurate assessment of the requirements of electric motors of different types and of different rating groups. In view, however, of the facts stated above, we are unable to make any estimate of the requirements of different types and of different rating groups of electric motors in the country.

7.4. The Tariff Board had estimated in its report of 1947 the near future demand in the country (undivided India) at 500,000 h.p. per year of which 80,000 h.p. represented the demand for D.C. motors, and 420,000 h.p. the demand for A.C. motors. The break-down of the latter was as under:—

210,000 h.p.—1 to 30 h.p. squirrel cage  
induction motors.

80,000 h.p.—Single phase fractional motors.

130,000 h.p.—Special types of motors.

The annual requirements of the country (India after partition) were estimated by the Tariff Board in its report of 1949 at 300,000 h.p. of which a little over 100,000 h.p. represented the demand for motors up to 30 h.p. The indigenous production of electric motors in 1954 was 186,643 h.p., which may be said to represent largely the demand for motors up to 30 h.p. There is no satisfactory basis on which the demand for fractional motors and special types of motors can be made with any degree of accuracy, but it seems to us that the estimates of 80,000 h.p. and 130,000 h.p. are on the high side. We feel that the demand for fractional motors and motors of 31 h.p. and above, and special types of motors may not exceed 130,000 h.p. at present. On this basis, we estimate the total demand for A.C. motors in 1955 at about 317,000 h.p. (187,000 plus 130,000). In view of the increase in the generation of electric power and development of irrigation and industrial activity and the tendency to use electric motors for individual drive, instead of group drive for industrial machines, it is reasonable to expect that the annual demand for electric motors will increase by about 10 per cent. each year in the next three years.

**8.1. Rated capacity and production.**—The Industrial Adviser to the Government of India in the Ministry of Commerce and Industry has stated that the total annual capacity of the 12 firms on the list of Government may be estimated at 200,000 h.p. according to the past pattern of production, but as the pattern has been changing, it would be reasonable to estimate the total annual capacity in 1955 at 300,000 h.p. The capacity claimed by these 12 firms is, however, as follows:—

	unit (in h.p.) As claimed by the
1. Crompton Parkinson (Works) Ltd., Bombay. facturing Co. Ltd., Calcutta.	93,600 48,936
3. Kirloskar Electric Co., Ltd., Bangalore	42,000
4. General Electric Company of India (Mfg.) Ltd., Calcutta.	16,415
5. National Electrical Industries, Ltd., Bombay.	30,000
6. P. S. G. and Sons' Charity Industrial Institute, Coimbatore.	12,744
7. British India Electric Construction Co., Ltd., Calcutta.	10,350
8. Bharat Bijlee, Ltd., Bombay.	18,000
9. Jyoti, Ltd., Baroda.	27,940
10. Electric Construction and Equipment Co., Ltd., Calcutta.	12,000
11. Motor and Machinery Manufacturers, Ltd., Calcutta.	24,000
12. Eastern Electric Co., Ltd., Coimbatore.	4,560
<b>Total</b>	<b>340,545</b>

Besides these firms, the Industrial Adviser has informed us that the following three firms who were reported to be manufacturing electric motors have claimed capacity as under:—

	h.p.
1. Calcutta Electrical Mfg. Co., Ltd., Calcutta	20,000 (projected)
2. India Electric Works, Ltd., Calcutta	12,000
3. Argus Engineering Co., Ltd., Coimbatore	6,000
2. Associated Electrical Industries Manu-	

Of these, we understand that Argus Engineering Company, Ltd. Coimbatore, is not now in production.

8.2. The following statement gives the production of electric motors in h.p. of the twelve firms on the list of Government for the years 1951 to 1954:—

	1951	1952	1953	1954
	H. P.	H. P.	H. P.	H. P.
1. Rompington (Parkinson Works), Ltd., Bombay.	56,520	51,223	43,570	58,992
2. Associated Electrical Industries Manufacturing Co. Ltd., Calcutta.	22,895	19,820	19,669	23,099
3. National Electrical Industries Ltd., Bombay.	8,059	10,371	10,189	11,461
4. Kirloskar Electric Co. Ltd., Bangalore.	27,998	27,714	35,918	51,729
5. P. S. G. and Sons' Charity Industrial Institute, Coimbatore.	3,689	5,664	5,908	5,146
6. Eastern Electric Co. Ltd., Coimbatore.	386	101	142	149
7. Electric Construction & Equipment Co. Ltd., Calcutta.	993	2,480	1,310	93
8. Bharat Bijlee Ltd., Bombay.	6,983	8,899	5,376	4,998
9. Jyoti Ltd., Baroda	3,349	6,336	9,427	8,530
10. G. E. C. of India (Mfg.) Ltd., Calcutta.	12,436	17,127	21,965	13,618
11. Motor and Machinery Manufacturers Ltd., Calcutta.	..	1,114	2,591	4,878
12. British India Electric Construction Co., Ltd., Calcutta.	4,584	12,698	6,602	3,950
	<u>147,892</u>	<u>163,547</u>	<u>162,667</u>	<u>186,643</u>

The above statement does not include the production of Calcutta Electrical Manufacturing Company, Ltd., and India Electric Works, Ltd., Calcutta. The representative of the Development Wing stated at the public inquiry that Calcutta Electrical Manufacturing Co., Ltd., and India Electric Works, Ltd., produced only fractional motors of single phase type against orders received by them and that their production was not considerable. The Industrial Adviser to the Government of India in the Ministry of Commerce and Industry has informed us that a new firm (Hindustan Electric

Company, Ltd.,) proposes to set up a factory at Faridabad to manufacture A.C. motors upto 300 h.p. aggregating to 65,000 h.p. per year. The representative of Government Electric Factory, Mysore, stated at the public inquiry that it had got plans to produce electric motors of 1 to 10 h.p. upto 25,000 h.p. per year during the next two years. The representatives of Kirloskar Electric Company, Ltd., Crompton Parkinson (Works), Ltd., General Electric Company of India (Manufacturing) Ltd., and Associated Electrical Industries Manufacturing Company, Ltd., Bharat Bijlee. Ltd., and Jyoti, Ltd., stated that they had plans to expand their capacity. When these programmes materialise, the total domestic capacity will increase to about 4 lakhs h.p. and the production will include motors of 300 h.p. and above as well as special types of motors.

9.1. *Raw materials.*—The principal raw materials required by the industry are—

(i) electrical steel stampings and sheets, (ii) copper winding wire and strips, (iii) leatheroid, (iv) empire cloth, (v) adhesive tape, (vi) cotton tape, (vii) micanite and impregnating varnish, (viii) pig iron, (ix) steel bars, (x) M.S. sheets, (xi) rods and bars, (xii) ball bearings, (xiii) welding rods, (xiv) electrodes and (xv) paints. Of these, synthetic enamelled wire, leatheroid, empire cloth, ball bearings of larger size and insulating varnish are imported at present. Certain finished components are also imported.

9.2 *Electrical steel stampings and sheets.*—At the public inquiry, the representative of Kirloskar Electric Company, Ltd., stated that they were producing stampings from electrical sheets purchased by them from Sankey Electrical Stampings, Ltd., and that the average quantity of electrical sheets required by them for one ton of stampings was 2.1 tons, and that their cost of electrical stampings worked out to Rs. 141 per cwt. He however admitted that as they were producing stampings of certain sizes and designs for their own motors, their wastage was less than that of Sankey Electrical Stampings Ltd., who produced stampings of a large variety of sizes and designs required by different manufacturers of electric motors. The representatives of some of the other manufacturers of electric motors also stated that the price charged by Sankey Electrical Stampings, Ltd., for their stampings was high and that the latter were giving a special rebate to certain manufacturers for the stampings supplied to them. The representative of Sankey Electrical Stampings, Ltd., who was present at the public inquiry informed us that the average price of their stampings varied from Rs. 169 to Rs. 174 per cwt. f.o.r. Bombay, that the average quantity of electrical sheets required by them for one ton of stampings was

3 tons and that a rebate was allowed for stampings supplied to certain manufacturers on account of the large volume of their orders. He further explained that there was a considerable wastage at their factory on account of the large variety of sizes and designs required by different manufacturers and that they had to increase the average price of their stampings from Rs. 158-12-0 in 1951 to Rs. 169 to Rs. 174 per cwt. at present on account of the increase of Rs. 75 per ton made by Tata Iron and Steel Company, Ltd., in their price of electrical steel sheets since 1950. He further stated that the demand for their stampings for electric motors had decreased from 626 and 762 tons in 1951 and 1952 to 480 and 494 tons in 1953 and 1954 respectively and that the monthly average wage rates (including dearness allowance, bonus, contribution to Provident Fund, etc.) had increased from Rs. 109-5 to Rs. 129-4. The question of price of electrical stampings was discussed by the Tariff Board in its report of 1949 and on the assumption that a reduction of Rs. 24 per ton would be made by Tata Iron and Steel Company, Ltd., in the price of Rs. 734 per ton charged by them for their electrical sheets, the Board estimated that a reduction of about Rs. 3.6 per cwt. would result in the price of electrical stampings on the basis that approximately three tons of electrical sheets would be required for one ton of stampings. The Board, however, observed that notwithstanding the various difficulties pointed out by Tata Iron and Steel Company, Ltd., and Sankey Electrical Stampings, Ltd., there was scope for further reduction in the price of electrical sheets and stampings and that it trusted that concerted action would be taken by both these companies to effect such a reduction. This question was discussed at great length at the public inquiry. One of the suggestions made was that price should be charged by Sankey Electrical Stampings, Ltd., on the basis of the actual wastage incurred in making stampings required by the manufacturing firm of electric motors for each order placed by it. This was not considered feasible by the representative of Sankey Electrical Stampings, Ltd. It is likely that this suggestion would involve maintenance of detailed and elaborate record, but in view of the statement made by the representative of Kirloskar Electric Company, Ltd., regarding the quantity of steel sheets required for one ton of stampings and the examination of the actual quantities of steel sheets consumed by Kirloskar Electric Company, Ltd., and Associated Electrical Industries Manufacturing Company, Ltd., for stampings made by them, by our Cost Accounts Officer, we consider it necessary that this suggestion should be examined further by Sankey Electrical Stampings, Ltd., and that if there are no serious difficulties, a trial should be given to it. This will remove the complaint regarding high price of stampings. In any event we feel that in spite of the increase in

the price of steel sheets and wage rates, there is scope for reduction in the price of stampings especially as we believe that if such reduction is made, the demand for stampings of Sankey Electrical Stampings, Ltd., is likely to increase considerably.

9.3 The representative of Tata Iron and Steel Company, Ltd., informed us that they had reduced the price of their electrical sheets by Rs. 24 per cwt. with effect from 1st January, 1950, but in view of the increase in labour cost and other charges they had to increase the price by Rs. 75 per ton (i.e., from Rs. 721 to Rs. 796 per ton) with effect from 1st May, 1953. We understand that the internal price of electrical sheets in the United Kingdom was Rs. 583 per ton in September 1950 and Rs. 762 per ton from June to November 1954 and that the current price is Rs. 812 per ton. Although there is some force in the contention that labour and other charges have gone up since 1950, we feel that there is scope for reduction in the price of steel sheets and suggest that Tata Iron and Steel Company, Ltd., should re-examine this matter and make this important raw material available to the industry at the lowest possible price.

9.4. *Synthetic enamelled wire.*—The representative of Crompton Parkinson (Works), Ltd., informed us that they were using D.C.C. wire for most of their motors. The question as to whether D.C.C. wire or synthetic enamelled wire should be used for electric motors was discussed at the public inquiry and the consensus of opinion was that synthetic enamelled wire was better than D.C.C. wire for two reasons. Firstly, the use of synthetic enamelled wire resulted in economy of space and, secondly the cost of winding was less because it was quicker and labour charges were lower. Some of the manufacturers of electric motors are already using synthetic enamelled wire. The production of synthetic enamelled wire has been stated by the representatives of indigenous manufacturers that they expect to attain a production of 100 tons per annum during this year. They have also applied to Government for increasing their capacity to 200 tons per year. Their representative informed us at the public inquiry that they had made arrangements with an indigenous paint company for producing enamel of the type of Britannia Enamel used in the United Kingdom for synthetic enamelled wire. As the right type of enamel is essential for the manufacture of synthetic enamelled wire, we recommend that efforts should be made by paint and varnish manufacturers in India to produce the enamel base required for synthetic enamelled wire. The representative of Indian Cable Company, Ltd., Calcutta, stated at the public inquiry that in consultation with the manufacturers of electric



motors, they had made a careful assessment of the requirements of synthetic enamelled wire for the indigenous electric motor industry and had estimated that about 300 tons of wire were required for electric motors and 200 tons for electric fans per year. He further stated that they had been buying ball bearings of certain sizes from the United States and expected to commence production towards the end of this year. As the process of manufacturing synthetic enamelled wire was very difficult and required training of workers for a long period, both National Insulated Cable Company, Ltd., and Indian Cable Company, Ltd., proposed to manufacture semi synthetic enamelled wire in the first instance. This wire has all the characteristics of complete synthetic enamelled wire, excepting abrasive resistance which is not very material. There is also the question of solvent resistance with this wire, but it was pointed out by the representative of Indian Cable Company, Ltd., that this difficulty could be overcome by the use of proper solvents. The production of semi synthetic enamelled wire by these two companies is expected to be sufficient to meet the present requirements of the electric motor industry. Until however the quality of the semi synthetic enamelled wire produced by them has been tested and found satisfactory by the electric motor industry, imports of synthetic enamelled wire would be necessary.

9.5 *Leatheroid*.—There is no production of leatheroid in the country.

9.6 *Empire cloth*.—Only one firm, namely, India Electric Works, Ltd., Calcutta, are producing empire cloth for their own requirements. The other manufacturers of electric motors have to obtain their requirements of empire cloth from foreign countries.

9.7 *Ball bearings*.—The representative of National Bearing Company, Ltd., Jaipur, who was present at the public inquiry stated that they were manufacturing 17 sizes of roller bearings and proposed to manufacture 8 more. He further stated that they were manufacturing roller bearings of 11" to 12" diameter for the railways. They had supplied some of the sizes of roller bearings to Crompton Parkinson (Works), Ltd., who were satisfied with the supply. The representative of Kirloskar Electric Company, Ltd., stated that their factory was under construction and that they exported ball bearings on some basis for the complaint regarding noise from these bearings. The representative of National Bearing Company, Ltd., stated that the quality of indigenous ball bearings had improved, but there was still a need for imports. The representative of National Bearing Company, Ltd., stated that

they had already completed the range of ball bearings up to 2" diameter and that they were gradually increasing the range from 2" to 3" diameter. He further assured us that they were in a position to produce ball bearings and roller bearings of all sizes required by the industry, provided that total quantity for each size was 250 or more, and to supply them to the industry at reasonable prices. In view of these assurances by National Bearing Company, Ltd., we suggest that the manufacturers of electric motors should obtain all their requirements of ball and roller bearings from National Bearing Company, Ltd., and that only when the latter are unable to supply bearings of any size required by them within a reasonable period, they should apply for licence to import them.

9.8 *Insulating varnish*.—The representative of Crompton Parkinson (Works), Ltd., stated at the public inquiry that the indigenous varnish was not up to the mark for the requirements of special motors, and that it was necessary to import special synthetic resin varnish. The manufacturers of varnishes in the country were making progress and had already shown some improvement in the quality of their products. As, however, this is an important raw material for electric motors especially those which are required for use in places where atmospheric and/or other conditions are of a special character, we recommend that imports of special types of varnishes should be allowed until such types are developed by indigenous manufacturers.

9.9 *Finished components*.—The representative of Crompton Parkinson (Works), Ltd., stated at the public inquiry that there was no difficulty in manufacturing slip rings, covers, etc., in the country. Kirloskar Electric Company, Ltd., and Jyoti, Ltd., were already producing slip rings, but it was pointed out to us by the representatives of two other manufacturers of electric motors that on account of the poor quality of the alloy, the wearing property of indigenous slip rings was not as satisfactory as that of imported ones. The representative of General Electric Company of India (Manufacturing) Ltd., stated that they were trying to manufacture slip rings locally, but whether they could be substituted for imported slip rings would depend upon the results of the tests. Since some of the manufacturers have already been producing slip rings, we suggest that efforts should be made by other manufacturers to obtain their supplies of slip rings from indigenous sources.

10.1 *Quality*.—We have received somewhat conflicting evidence regarding the quality of indigenous electric motors. Some of the importers and consumers stated in their memoranda that the quality of indigenous motors was satisfactory, and particularly of motors

produced by manufacturers who had tie-ups with foreign manufacturers. Some of the consumers, however, complained that the quality of indigenous motors was inferior to that of imported motors. The following defects were pointed out by them. The manufacturers did not conform to British or Indian standard specifications and their motors could not take the full load as indicated on their plates; the winding was inferior; the insulation resistances were low and in some cases internal connections were wrong; the clearance between winding and covers was so narrow that any inspection, check up or repairs were extremely difficult; the end covers were not always found identical with imported electric motors, making it impossible to reverse the motor in case of necessity; and instances of indigenous motors running at much more than specified thermal rating at full speed were not uncommon.

10.2. The question was discussed at great length at the public inquiry. Some of the indigenous manufacturers of electric motors admitted that motors produced by them were not suitable for use in chemical factories or in places where humidity was very high. They, however, stated that if requisite details were furnished to them they could produce motors which would be suitable for working under the above conditions. The representative of one manufacturing company informed us that it had received complaints regarding lack of proper impregnation in its motors and he assured us that the company was taking necessary steps to remove this defect.

10.3. The representative of Tata Iron and Steel Company, Ltd., who was present at the public inquiry stated that some of the indigenous motors purchased by them had started giving trouble within six months of their installation. He, however, stated that when the defects were brought to the notice of the manufacturers, two of them had carried out repairs free of charge.

10.4 The representatives of manufacturers of electric motors stated at the public inquiry that after electric motors had been finally assembled, mechanical inspection and electric testing were carried out in their factories in respect of such motors. The representative of the Director General of Supplies and Disposals who was present at the public inquiry informed us that no complaints had been received regarding indigenous motors from any of the departments to whom they had been supplied. From the evidence received by us, we are satisfied that the quality of indigenous motors has much improved and is generally satisfactory, but that special care is necessary in the manufacture of electric motors which are required for heavy duty or for work in special atmospheric and other conditions. We are of the view that while it is essential that

the industries using electric motors should specifically state their requirements (including special conditions in which motors have to work) to the indigenous manufacturers from whom they wish to purchase motors, the indigenous manufacturers of motors should take care to remove all defects including those pointed out above by using materials of good quality, exercising strict supervision at every stage of manufacture and carrying out adequate tests before motors leave the factory. The need for these precautionary measures cannot be stressed too strongly because a defective motor supplied to a consuming industry may cause considerable loss to it. The indigenous manufacturers have assured us that they would carry out necessary improvements and ensure by adequate inspection and testing that the quality of motors produced by them is as satisfactory as that of imported motors. In view, however, of the complaints received by us regarding the quality of indigenous motors, we recommend that facilities should be provided by Government for type testing as well as testing under actual working conditions and for issue of certificates embodying the results of testing by the institute carrying out such tests. This will enable manufacturers of electric motors to furnish evidence regarding quality to purchasers of electric motors who may ask for such certificates or who have complained about the quality of motors supplied to them.

10.5. The representative of Kirloskar Electric Company, Ltd., stated that prejudice still existed against indigenous motors. One of the importers who was present at the public inquiry stated that there was no prejudice and consumers were now buying indigenous motors without any hesitation. It was, however, pointed out that some of the consumers still preferred electric motors of foreign manufacture. From the evidence available to us we are satisfied that prejudice is now much less than what it was six years ago, but that preference is still shown by some of the consumers for imported motors.

10.6 We understand that standard specifications for motors of industrial type have been laid down by the Indian Standards Institution, but no steps have been taken so far in regard to standardisation. The representative of Crompton Parkinson (Works), Ltd., informed us that standardisation was possible only in respect of dimensions, that is, size of the fixing holes and distance between them, height of the shaft from the base and diameter of the shaft. It was agreed that if standardisation could be achieved, production costs could be reduced. The representative of the Development Wing of the Ministry of Commerce and Industry pointed out that so far as physical dimensions were concerned, the industry could adopt either American or British Standards, but that he thought

that it would be advisable to wait till the International Commission had formulated standard specifications. This was necessary, especially as heavy machinery was still being imported with electric motors and it was in the interests of the industry to have standards conforming to the standards adopted for the manufacture of motors in such machines. While there is much force in this contention, we suggest that the Indian Standards Institution should consider the feasibility of evolving standards suitable for conditions in India as early as possible.

11. *Existing rates of duty.*—Electric motors and component parts thereof are assessed to duty under Item No. 72 (14) of the Indian Customs Tariff Schedule (39th Issue), 1954. The relevant extract of the schedule is given below:—

Item No.	Name of article	Nature of duty	Standard rate of duty	Preferential rate of duty if the article is the produce or manufacture of			Duration of protective rate of duty
				The U. K.	A British Colony	Burma	
1	2	3	4	5	6	7	8
72 (14)	(a) The following electric motors, namely, squirrel cage induction motors of brake-horse-power not exceeding 20, including fractional brake-horse-power.	Protective.	10½ per cent. <i>ad valorem</i> .	..	..	..	December, 3 1954*
@	(b) Component parts of electric motors as defined in item 72(14)(a) but excluding control gear for the same provided that only such articles shall be deemed to be component parts as are essential for the working of the electric motors and have been given for that purpose some special shape or quality which would not be essential for their use for any other purpose.	Protective.	20 per cent. <i>ad valorem</i> .	..	..	..	December, 3 1954*

\*Protection was extended up to 31st December, 1955, by the Indian Tariff (Third Amendment) Act, 1954.

@The duty was increased from 10½ per cent. *ad valorem* to 20 per cent. *ad valorem* by the Finance Act, 1954.

**12.1. Import control policy and imports.**—The import control policy followed by the Government of India since 1950 has been as follows:—

*January-June, 1950.*—No licences were issued except for imports of spare parts from dollar area, Belgium and her possessions, licences were issued subject to monetary ceiling for imports from Japan, Western Zone of Germany and other currency areas.

*July-December, 1950 to July-December, 1951.*—Established importers were allowed a quota of 40 per cent. of half of best year's imports for imports of complete electric motors from soft currency areas. In respect of spare parts the quota allowed to established importers was 100 per cent. from dollar area with the stipulation that no licence would be granted for motors up to 30 h.p. of the type A.C. 3 phase, squirrel cage induction motors, A.C. 50 cycles 400/440 volts horizontal or vertical spindle, screen protected, drip proof, fan cooled and/or totally enclosed smooth acceleration.

*January-June, 1952.*—Established importers were granted a quota of 40 per cent. for imports of complete motors from soft currency areas only. A quota of 100 per cent. was however granted for the imports of spare parts of motors from dollar and soft currency areas.

*July-December, 1952 to January-June, 1954*

- |  |   |
|--|---|
| (a) Fractional h. p. motors, i. e., motors less than 1 h. p. suitable for D. C. supply or single phase.  | Established importers were granted a quota of 100 per cent for imports from soft currency areas.            |
| (b) A. C. 3 phase 50 cycles squirrel cage motors up to 30 h. p. conforming to details of construction and design as given below and slip ring motors from 10 to 30 h. p.<br>(i) Type—Standard High Torque (including loom motor) smooth acceleration.<br>(ii) Voltage—200/220, 400/440 or 500/550<br>(iii) Spindle—Horizontal or vertical (excluding hollow shaft motors).<br>(iv) Enclosure screen protected drip-proof/ totally enclosed (including fan cooled). | No licences were granted except for imports as integral parts of machinery.                                 |
| (c) Motors of the types mentioned in (b) above but from 31 h. p. to 50 h. p.   | No licences were granted except for import as integral parts of machinery.                                  |
| (d) Other types of motors . . . . .  | Established importers were granted a quota of 100 per cent for imports from soft currency areas.            |
| (e) Parts of motors . . . . .  | Established importers were granted a quota of 100 per cent for imports from dollar and soft currency areas. |

July—December, 1954

- (a) Fractional horse power motors, *i. e.*, motors of less than 1 h.p. suitable for D. C. supply or single phase. Established importers were granted a quota of 100 per cent for imports from soft currency areas. Up to 20 per cent of the face value of the quota licence could be utilised for imports from dollar area. Actual users and new-comers were also eligible to apply for licences.
- (b) A. C. 3 phase, 50 cycles squirrel cage motors up to 30 h. p. conforming to details of construction and design as given below and slip ring motors from 10 to 30 h.p. } No licences were granted except for imports as integral parts of machinery.
- (i) Type—Standard/High Torque (including loom motors) smooth acceleration. }  
 (ii) Voltage, 200/220, 400/440 or 500/550. }  
 (iii) Spindle—Horizontal or vertical }  
 (iv) Enclosure screen protected-drip-proof totally enclosed (including fan cooled). } No licences were granted except for imports as integral parts of machinery.
- (c) Motors of types mentioned in (b) above but from 31 h.p. to 50 h.p. }
- (d) Other types of motors . . . . . Established importers were granted a quota of 100 per cent for imports from soft currency areas. Actual users and new comers were also eligible to apply for licences.
- (e) Parts of motors . . . . . Established importers were granted a quota of 100 per cent for imports from dollars and soft currency areas.

January—June, 1955

- (a) Fractional horse power motors, *i.e.*, motors of 1 h.p. and below suitable for D. C. supply or single phase. Established importers were granted a quota of 100 per cent for imports from soft currency areas. Up to 40 per cent of the face value of the quota licence could be utilised for imports from dollar area. Actual users and new-comers are also eligible to apply for licences.
- (b) A. C. 3 phase, 50 cycles squirrel cage motors up to 30 h.p. conforming to details of construction and design as given below and slip ring motors from 10 to 30 h.p. } A. No licences will be granted. Applications from persons and firms who have imported during the basic period (i) motors as component parts of other machinery and (ii) motors falling under prohibited category (b) and (c), but who are unable to establish their quotas for imports under (a) and (d) will be considered on *ad hoc* basis. Such of the established importers who were granted these *ad hoc* licences for permissible types of motors during July—December, 1954 period, will, on application, be granted "repeat" licences issued during that licensing period.
- (i) Type—Standard/High Torque (including loom motors) smooth acceleration. }  
 (ii) Voltage 200/220, 400/440 or 500/550. }  
 (iii) Spindle horizontal or vertical . . . . . }  
 v) Enclosure screen protected drip-proof totally enclosed (including fan cooled). } B. Prohibited types of motors specified in items (b) and (c) will be allowed clearance if imported as integral parts of machinery.
- (c) Motor of types mentioned in (b) above but from 31 h.p. to 50 h.p. } C. Applications from pump manufacturers requiring vertical spindle hollow shaft motors of ratings not produced in the country will be considered *ad hoc*.

- (d) Other types of motors . . . Established importers are granted a quota of 100 per cent for imports from soft currency areas with the stipulation that not more than 50 per cent of the licences granted under this item can be utilised for import of slip ring and squirrel cage motors up to 75 h.p. Actual users and new-comers are also eligible to apply for license.
- (e) Parts of motors . . . Established importers are granted a quota of 100 per cent of imports of parts or alternatively a quota of 10 per cent for imports of complete motors from dollar and soft currency areas.

**12.2. Imports.**—In its report of 1949, the Tariff Board had recommended that statistics of imports should be compiled under the following categories:—

- (i) Squirrel cage induction motors 1 to 20 b.h.p.
- (ii) Squirrel cage induction motors 21 to 30 b.h.p.
- (iii) Slip ring motors 15 to 50 b.h.p.
- (iv) Fractional b.h.p.
- (v) All other electric motors not covered by the above categories.

**12.3.** The Director General of Commercial Intelligence and Statistics has been compiling statistics under the above categories since September 1950, and furnishing them to us every month. For reasons explained in paragraph 7.2. above, we have found that the information supplied by him cannot be considered as satisfactory. We are taking up this matter with him and suggesting that in order that there may be no misunderstanding regarding the method of classifying and recording imports of electric motors under various categories, a conference should be held with the representatives of the Collectors of Customs and the method for collecting and recording the information relating to imports of electric motors in the customs offices and for furnishing it to the Director General of Commercial Intelligence and Statistics should be laid down. In order to estimate the current demand for electric motors of principal types and ranges of h.p.; on the basis of production and imports, it is necessary to have reliable statistics of imports of such types and ranges and we, therefore, recommend that arrangements should be made by Government with the Collectors of Customs and the Director General of Commercial Intelligence and Statistics



to record separately the total number and value of electric motors imported under each of the following categories.

- (i) Squirrel cage induction motors less than 1 b.h.p.
- (ii) Squirrel cage induction motors of 1 to 50 b.h.p.
- (iii) Squirrel cage induction motors of 51 to 100 b.h.p.
- (iv) Squirrel cage induction motors of 101 to 200 b.h.p.
- (v) Squirrel cage induction motors above 200 b.h.p.
- (vi) Slip ring motors of 1 to 50 b.h.p.
- (vii) Slip ring motors of 51 to 100 b.h.p.
- (viii) Slip ring motors of 101 to 200 b.h.p.
- (ix) Slip ring motors above 200 b.h.p.
- (x) All other fractional H.P. motors below 1H.P. not covered by the above classification.
- (xi) All other motors of integral H.P. not covered by the above classification.

12.4. Kirloskar Electric Company, Ltd., stated in their memorandum that in spite of the ban, a large number of electric motors up to 50 h.p. was being imported as integral parts of machinery. They, therefore, suggested that only such electric motors of the prohibited range of h.p. as are built-in as part of the machinery with one or more components of the motor being common to the motor and the driving machinery should be allowed to be imported. This question was discussed at the public inquiry. The general opinion among the manufacturers of electric motors was that this facility was being abused and foreign manufacturers were supplying motors of the prohibited range of h.p. as integral parts of machinery, although imports of such motors were prohibited. It was generally agreed that in the absence of complete information regarding motors and machinery with which they were imported, it was not possible to say whether such imports were unnecessary. The representative of the Development Wing of the Ministry of Commerce and Industry stated that it was not possible to scrutinise applications for imports of machinery together with blue prints for the same with a view to deciding whether the electric motor of the prohibited range of h.p. proposed to be imported along with the machinery was really an integral part of such machinery, within reasonable time and if this procedure was introduced, it would cause great hardship to importers of such machinery. The representative of the Customs Office, Bombay, explained that if the licence was for import of machinery with electric motor as an integral part of it, no objection was generally raised but if it was felt that the motor was not an integral part of the machinery, the case was referred by the Customs Department to the Chief Controller of

Imports for advice. It is possible that some motors of the prohibited range of h.p. may be imported as integral parts of machinery even though imports of such motors may not be really necessary, but we feel that any method of the kind suggested by Kirloskar Electric Company, Ltd., is likely to create administrative difficulties and cause undue hardship to importers of such machinery. The representative of the Development Wing suggested that the Indian Electrical Manufacturers' Association should get in touch with the Associations of Textile Mills, etc., and arrange with them for supply of indigenous motors in cases in which foreign motors need not be imported as integral parts of machinery. We trust that this suggestion will be followed by the manufacturers of electric motors in the country.

13. **C.i.f. prices.**—We have obtained information from the Collectors of Customs and some of the importers regarding c.i.f. prices, clearing charges, etc., of imported electric motors. This information is given in Appendix IV. Two of the importing firms have also supplied to us information in regard to c.i.f. prices based on the prevailing ex-works prices of electric motors in the United Kingdom of the types and h.p. in respect of which we have made estimates of fair ex-works prices for the future. The c.i.f. prices, clearing charges, etc., were discussed at the public inquiry and we have adopted the following c.i.f. prices, clearing charges and landed costs for the purpose of comparison with the fair ex-works prices of indigenous electric motors of corresponding types:—

नमो भगवते वासुदेवाय

Description of the electric motor		H. P.	C. i. f. price	Customs duty at 10½%	Clearing charges	Landed cost with duty	Landed cost without duty
			Rs.	Rs.	Rs.	Rs.	Rs.
1.	Squirrel cage, screen protected drip proof (3 phase, 50 cycles, 400/440 V, 1450 RPM).	3	218	23	5	246	223
2.	Do.	5	280	30	6	316	286
3.	Do.	7.5	340	36	9	385	349
4.	Do.	10	418	44	10	472	428
5.	Do.	15	547	57	14	618	561
6.	Squirrel cage, totally enclosed fan cooled (3 phase, 50 cycles, 400/440 V, 1450 RPM).	3	323	34	8	365	331
7.	Do.	5	323	34	8	365	331
8.	Do.	7.5	413	43	10	466	423
9.	Do.	10	507	53	13	573	520
10.	Do.	15	708	74	18	800	726
				duty at 5-14%			
11.	Slip ring, screen protected 1435 RPM	25	1,031	54	26	1,111	1,051
12.	Do. 1440 RPM	50	1,622	85	41	1,748	1,663
13.	Loom motors (6 poles) 930 RPM	1	238	25	3	266	241

#### 14.1. Estimate of cost of production and fair-ex-works price.—

We selected three units, namely, Bharat Bijlee, Ltd., Bombay, Kirloskar Electric Company, Ltd., Bangalore, and Associated Electrical Industries Manufacturing Company, Ltd., Calcutta, for cost examination. Our Cost Accounts Officer has examined the costs of production of electric motors at the factories of these three units for 1953-54 and prepared estimates of costs of production at the same factories for the future. Bharat Bijlee, Ltd., and Kirloskar Electric Company, Ltd., are public limited companies, while Associated Electrical Industries Manufacturing Company, Ltd., are a private limited company. Kirloskar Electric Company, Ltd., are almost wholly engaged in the manufacture of electric motors of various types and ranges of h.p. Bharat Bijlee, Ltd., are making transformers in addition to electric motors, while Associated Electrical Industries Manufacturing Company, Ltd., are producing electric motors, transformers, switch gear, electrodes, etc. Kirloskar Electric Company, Ltd., have a factory of medium size where they are manufacturing various types of motors, such as squirrel cage, screen protected (drip proof), totally enclosed (fan cooled), slip ring, loom motors and motors such as hollow vertical spindle, etc. which represent 48.6 per cent. 22.5 per cent., 14 per cent. 0.8 per cent. and 14.1 per cent. respectively of the total production in h.p. The production of Kirloskar Electric Company, Ltd., Bharat Bijlee, Ltd., and Associated Electrical Industries Manufacturing Company, Ltd., in 1954 was 51,729, 4,998 and 23,099 h.p. respectively. The factory of Kirloskar Electric Company, Ltd., is also working to its capacity. Taking all these factors into consideration, we have decided to take Kirloskar Electric Company, Ltd., as the representative unit for the purpose of comparison of the fair ex-works prices for the future of certain types of electric motors produced by them with the landed costs without duty of corresponding types of imported motors. The costs of production of 20 different types of electric motors have been worked out, of which 8 ranging from 3 to 50 h.p. belong to the screen protected (drip proof) type; 7 ranging from 3 to 30 h.p. to the totally enclosed (fan cooled) type; 3 ranging from 20 to 50 h.p. to the slip ring type and one each to the loom (1 h.p.) and the hollow vertical spindle (15 h.p.) types.

14.2. The cost data were discussed with the representatives of Kirloskar Electric Company, Ltd. As they desire that the details of costs of production should be kept confidential, we are forwarding the report of the Cost Accounts Officer as a separate enclosure to this report.

14.3. The following statement gives the estimates of the fair ex-works prices for the future of motors of certain types and h.p. manufactured by Kirloskar Electric Company, Ltd., made by us after discussion with their representatives.

Squirrel cage, Screen protected (Drip proof)—4 Poles

Loom motors 6 Poles

slip ring 4 Poles

(Fan cooled)—4 Poles

Type

H.P.	3	5	7.5	10	15	3	5	7.5	10	15	25	50	1
Details	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1. Net material cost	174.40	219.80	274.80	290.40	422.90	190.80	264.60	312.50	375.70	511.30	728.10	1225.10	189.00
2. Conversion charges	51.71	66.02	80.62	99.38	139.27	60.05	78.52	100.08	123.00	171.65	263.39	407.95	55.60
3. Painting and packing cost.	8.18	10.45	12.76	15.73	20.46	9.50	12.43	15.84	19.47	27.17	41.69	64.57	8.80
4. Royalty	7.37	9.41	11.48	14.16	18.60	8.55	11.19	14.26	17.52	24.70	37.90	58.70	7.92
5. Cost of production	241.66	305.68	379.66	419.67	571.23	268.90	366.74	442.68	535.69	734.82	1071.08	1756.32	261.32
6. Interest on working capital	2.67	3.37	4.20	4.63	6.13	2.97	4.06	4.89	5.92	8.12	11.84	19.43	2.89
7. Return on block	11.90	15.20	18.56	22.88	29.76	13.82	18.08	23.04	28.32	39.52	60.64	93.92	12.80
8. Fair ex-works	256.23	324.25	402.42	447.18	607.30	285.69	388.88	470.61	569.93	782.46	1143.56	1869.67	277.01
Say . . .	256	324	402	447	607	286	389	471	570	782	1144	1870	277
9. Contingencies and freight disadvantage.	10	13	16	18	24	11	16	19	23	31	46	75	11

10. Fair ex-works price plus contingencies and freight disadvantage.	266	337	418	465	631	297	405	490	593	813	1150	1945	280
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14.4. We have taken the following factors into account in arriving at the above estimates:—

(a) *Production*.—We have assumed that the factory will work second shift and that production will be  $1\frac{1}{2}$  times what it was in 1953-54.

(b) *Raw materials*.—The quantities of raw materials inclusive of reasonable wastage have been allowed for the future on the basis of actual quantities consumed during 1953-54. Costs have been worked out for these quantities on the basis of latest prices. In the case of grey iron castings produced by Kirloskar Electric Company, Ltd., in their own foundry, the costs per pound of castings during the year 1953-54 have been adopted for the future after making necessary adjustments.

(c) *Labour and other manufacturing expenses*.—Adequate records are maintained by the Company regarding the number of workers present and wages earned by them. An incentive system has been introduced and bonus is paid for increased production. The system of recording man hours by operations requires to be improved so that costs of direct and indirect labour man hours could be worked out. All the manufacturing expenses and total wages have been distributed to electric motors of each type and h.p. duly weighted with the list prices. In working out the future costs suitable adjustments for possible increases under labour, repairs and maintenance, consumable stores, establishment and overheads have been made. Provision for advertisement has been made at  $\frac{3}{4}$  per cent. of the list prices.

(d) *Depreciation*.—Depreciation has been allowed on the written down value according to income-tax rates.

(e) *Interest on working capital*.—Working capital has been taken to be equal to 3 months' cost of production and interest at  $4\frac{1}{2}$  per cent. has been allowed thereon.

(f) *Return on block*.—Return has been allowed at 10 per cent. on the original value of the assets employed in the manufacture of electric motors.

We have been informed that within the last few days the price of copper wire has risen considerably and it is proposed by Government that excise duty of 10 per cent. should be levied on varnishes. C.i.f. prices of electric motors are almost the same in principal ports in India. As freight charges have to be incurred for transport of indigenous electric motors from the place of manufacture to the principal ports, they are at a disadvantage in comparison with imported electric motors. We consider that both these factors should

be taken into account in assessing the quantum of protection required by the indigenous industry, and we have therefore provided for a margin of 4 per cent. on the fair ex-works price for contingencies and freight disadvantage.

15. *Comparison of the fair ex-works prices of indigenous electric motors with landed costs without duty of imported electric motors.*—The following statement gives a comparison of the fair ex-works prices plus margin for contingencies and freight disadvantage of indigenous electric motors of certain types and h.p. as estimated by us with landed costs without duty of imported electric motors of similar types and h.p.

(Statement on next page)



Sl. No.	Description of the electric motor	Squirrel cage, screen protected drip proof Totally enclosed fan cooled. (4 poles)										Slip ring (4 poles)	Loom motors	
		H. P.	3	5	7.5	10	15	3	5	7.5	10			15
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1.	C. i. f. price . . .	218	280	340	418	547	323	323	413	507	708	1,031	1,622	238
2.	Customs duty at 10½% on (1)	23	29	36	44	57	34	34	43	53	74	..	..	25
	at 5-14% on (1) . . .	..	..	..	..	..	..	..	..	..	..	54	85	..
3.	Clearing charges . . .	5	6	9	10	14	8	8	10	13	18	26	41	3
4.	Landed cost with duty (1) plus (2) plus (3).	246	315	385	472	618	365	365	466	573	800	1,111	1,748	266
5.	Landed cost without duty (1) plus (3).	223	286	349	428	561	331	331	423	520	726	1,057	1,663	241
6.	Fair ex-works price for the future plus margin of 4% for contingencies and freight disadvantage.	266	337	418	465	631	297	405	490	593	813	1,190	1,945	288
7.	Difference between (6) and (5).	43	51	69	37	70(—)	34	74	67	73	87	133	282	47
8.	(7) as a percentage of (1) .	19.7	18.2	20.3	8.9	12.8	(—)10.5	22.9	16.2	14.4	12.3	12.9	17.4	19.7



It will be seen that the duty required to equate the fair ex-works price with the landed cost without duty in the case of (i) squirrel cage screen protected (drip proof) motors ranges from 8.9 per cent to 20.3 per cent; (ii) totally enclosed fan cooled motors ranges from (minus) 10.5 per cent to 22.9 per cent; (iii) slip ring motors from 12.9 per cent to 17.4 per cent; and (iv) loom motors comes to 19.7 per cent. We have also worked out the weighted average duties required to equate the fair ex-works prices of squirrel cage motors of screen protected (drip proof) and totally enclosed (fan cooled) types and slip ring motors separately duly weighted with the actual number of motors produced in each group and h.p. These duties work out to

- (1) 16.5 per cent for squirrel cage motors of screen protected (drip proof) type
- (2) 7.4 per cent for totally enclosed (fan cooled) motors
- (3) 15.2 per cent for slip ring motors and
- (4) 19.7 per cent for loom type of motors forming 56.5 per cent, 26.2 per cent, 16.3 per cent and 1 per cent respectively of the total production in h.p. of the above four groups representing 85.9 per cent of total production of all types of motors produced by Kirloskar Electric Co. Ltd.

**16.1. Measure of protection.**—The electric motor industry has enjoyed protection for nearly 7 years and during this period has made considerable progress. The total production has increased from 45,880 h.p. in 1946 to 186,643 h.p. in 1954.

The number of types has also increased and the range of h.p. has been widened. The quality of indigenous motors has much improved and some of the manufacturers are now able to produce electric motors of 300 h.p. and above. Protection is, however, still required by the industry in order to enable it to consolidate its position, to expand its production, to widen its range of h.p., to further improve its quality, and to lower its costs of production. The duty indicated for equating the fair ex-works price with the landed cost without duty for 85.9 per cent of production of the representative unit is 14 per cent. This duty is, however, based mainly on the production of electric motors of squirrel cage screen protected (drip proof), totally enclosed (fan cooled) slip ring and loom types and of ranges from 3 h.p. to 15 h.p. in the first and second types, 25 h.p. and 50 h.p. in the third type and 1 h.p. in the fourth type. As the scope of the inquiry includes squirrel cage induction and slip ring motors up to 100 h.p., the production of electric motors over 15 h.p. in the first two types and over 50 h.p. in the third type may be expected to increase in the future. Till however a sufficient volume of production is attained, the cost of manufacture of motors

of higher range (above 15 h.p. in the case of the first and second types and 50 h.p. in the case of the third type) is likely to be greater than in the lower range. The quantum of duty required for such motors would, therefore, be higher than the weighted average duty of 14 per cent indicated for the above types. Slip ring motors are not protected at present and are assessed to revenue duty at  $5\frac{1}{4}$  per cent. Since, however, some of the manufacturers have already started producing slip ring motors of 20 to 50 h.p., it is necessary to ensure that their production is not only maintained, but expanded by a levy of adequate duty. We have come to the conclusion that a duty of 15 per cent is necessary to protect the industry. We, therefore, recommend that protection should be continued for a further period of three years, that is, up to 31st December, 1958, and that protective duty should be levied at 15 per cent. We have, however decided to exclude squirrel cage motors of less than one quarter of one brake-horse-power from the scheme of protection in order that all motors of less than  $\frac{1}{4}$  b.h.p. may be liable to the higher rate of duty applicable to I.C.T. Item No. 72(6).

16.2. As regards component parts, they should ordinarily be subject to the same rate of duty as that levied for electric motors, but as the present rate of duty is 20 per cent and gives adequate protection to the industry, we do not consider it necessary to reduce it. We, therefore, recommend that protective duty should be levied at the existing rate of 20 per cent on all parts except control gear.

16.3. If the above recommendations are accepted item No. 72(14) of the Indian Customs Tariff Schedule may be modified as follows:—

Item No.	Name of article	Nature of duty	Standard rate of duty	Preferential rate of duty if the article is the produce or manufacture of			Duration of protective rates of duty
				The U. K.	A British Colony	Burma	
1	2	3	4	5	6	7	8
72(14)	(a) The following electric motors, <i>viz.</i>	Protective	15 per cent <i>ad valorem.</i>	..	..	..	December, 31st, 1958.

Squirrel cage induction motors of brake-horse-power, not exceeding 100, but not less than one quarter of one brake-horse power and slipring motors of brake-horse power not exceeding 100 but not less than one brake-horse power excluding flame proof motors and variable speed commutator motors.

1	2	3	4	5	6	7	8
	(b) Component parts of electric motors as defined in item 72 (14) (a), but excluding control gear for the same provided that only such articles shall be deemed to be component parts as are essential for the working of the electric motors and have been given for that purpose some special shape or quality which could not be essential for their use for any other purpose.	Protective.	20 per cent. <i>ad valorem</i> .				December 31st, 1958

17.1. **Ancillary matters.**—The Industry has asked for exemption from customs duty on raw materials which are not available from indigenous sources and have to be imported. Our cost examination shows that the duty paid on imported copper wire is about 3 per cent and on imported bearings about 1 to 2 per cent of the fair ex-works price. The import duty on other items such as leatheroid, empire cloth, etc. is insignificant. As the total duty forms a small proportion of the fair ex-works price and as both copper wire (D.C.C. as well as synthetic enamelled) and bearings (roller as well as ball) are under production in the country, we do not consider that it is necessary to give any relief to the industry in this respect. Besides, we have taken the duty paid on imported raw materials into account in estimating the fair ex-works price.

17.2. A request has also been made by the industry that a ban should be imposed on imports of electric motors which are being manufactured or are likely to be manufactured in the country. The industry is now in a position to meet the entire domestic demand in respect of motors of certain types and ranges of h.p. Some of the units have also plans for expanding their production and undertaking manufacture of motors of new types. The quality of indigenous motors is generally satisfactory and keen competition exists among the producers of electric motors in the country. We have no doubt that so long as import control has to be maintained on balance of payments grounds, due consideration will be given by Government to the above factors in regulating imports of electric motors.

18. **Summary of conclusions and recommendations.**—Our conclusions and recommendations are summarised as under:—

(i) The scope of the inquiry includes squirrel cage induction motors of brake-horse-power not exceeding 100, including fractional brake-horse-power, slip ring motors of brake-horse-power not exceeding 100; but excludes flame proof motors and variable speed commutator motors. The scope also includes all component parts of electric motors, except control gear.

[Paragraph 5.2]

(ii) We recommend that arrangements for testing flame proof motors should be made by Government at the Fuel Research Institute, Dhanbad, or at any other suitable place as early as possible.

[Paragraph 5.2]

(iii) The domestic demand for A.C. electric motors in 1955 is estimated at about 317,000 h.p. The demand is estimated to increase by about 10 per cent each year in the next 3 years.

[Paragraph 7.4]

(iv) The annual capacity for electric motors in the country in 1955 is estimated at 300,000 h.p. The capacity is expected to increase to 400,000 h.p. per year when expansion programmes of certain units materialise.

[Paragraph 8.1 & 8.2]

(v) We consider it necessary that Sankey Electrical Stampings, Ltd., Bombay, should examine further the suggestion that they should charge prices for electrical stampings on the basis of the actual wastage incurred in making stampings required by an electric motor manufacturing firm for each order placed by it, and that if there are no serious difficulties, a trial should be given to this method of charging prices for stampings.

[Paragraph 9.2]

(vi) There is scope for reduction in the price of stampings charged by Sankey Electrical Stampings, Ltd.

[Paragraph 9.2]

(vii) Tata Iron and Steel Company, Ltd., should re-examine the question of price of their electrical steel sheets and make them available to the electric motor industry at the lowest possible price.

[Paragraph 9.3]

(viii) We recommend that efforts should be made by paint and varnish manufacturers in India to produce the enamel base required for synthetic enamelled wire.

[Paragraph 9.4]

(ix) Imports of synthetic enamelled wire should be allowed until semi-synthetic enamelled wire produced in the country has been tested and found satisfactory by the electric motor industry.

[Paragraph 9.4]

(x) Manufacturers of electric motors should obtain all their requirements of ball and roller bearings from National Bearing Company, Ltd., and only when the latter are unable to supply bearings of any size required by the manufacturers within a reasonable period, they should apply for licences to import them.

[Paragraph 9.7]

(xi) Imports of special types of varnishes should be allowed until such types are developed by indigenous manufacturers.

[Paragraph 9.8]

(xii) Since some of the manufacturers of electric motors have already been producing slip rings in the country, we suggest that efforts should be made by other manufacturers to obtain their supplies of slip rings from indigenous sources.

[Paragraph 9.9]

(xiii) The quality of indigenous motors is generally satisfactory, but special care is necessary in the manufacture of electric motors which are required for heavy duty or for work in special atmospheric and other conditions.

[Paragraph 10.4]

(xiv) It is essential that the industries using electric motors should specifically state their requirements (including special conditions in which motors have to work) to the indigenous manufacturers and that the latter should take care to remove all defects and exercise strict supervision at every stage of manufacture and carry out adequate tests before motors leave the factory.

[Paragraph 10.4]

(xv) To enable manufacturers of electric motors to satisfy the purchasers regarding the quality of motors, we recommend that facilities should be provided by Government for type testing as well as testing under actual working conditions and for issue of certificates embodying the results of testing by the institute carrying out such tests.

[Paragraph 10.4]

(xvi) Prejudice is now much less than what it was six years ago, but preference is still shown by some consumers for imported motors.

[Paragraph 10.5]

(xvii) The Indian Standards Institution should consider the feasibility of evolving dimensional standards for electric motors suitable for conditions in India as early as possible.

[Paragraph 10.6]

(xviii) Government should arrange with the Collectors of Customs and the Director General of Commercial Intelligence and Statistics to record separately the total number and value of electric motors under each of the following categories:—

- (i) Squirrel cage induction motors less than 1 b.h.p.
- (ii) Squirrel cage induction motors of 1 to 50 b.h.p.
- (iii) Squirrel cage induction motors of 51 to 100 b.h.p.
- (iv) Squirrel cage induction motors of 101 to 150 b.h.p.
- (v) Squirrel cage induction motors above 200 b.h.p.
- (vi) Slip ring motors of 1 to 50 b.h.p.
- (vii) Slip ring motors of 51 to 100 b.h.p.
- (viii) Slip ring motors of 101 to 200 b.h.p.
- (ix) Slip ring motors above 200 b.h.p.
- (x) All other fractional h.p. motors below 1 h.p. not covered by the above classification.
- (xi) All other motors of integral h.p. not covered by the above classification.

[Paragraph 12.3]

(xix) The Indian Electrical Manufacturers' Association should get in touch with Associations of Textile Mills, etc., and arrange with them for supply of indigenous motors in cases in which foreign motors need not be imported as integral parts of machinery.

[Paragraph 12.4]

(xx) Protection to the industry should be continued for a further period of three years that is up to 31st December 1958, and protective duty at the rate of 15% ad valorem should be levied on imports of squirrel cage induction motors of brake-horse power not exceeding 100 but not less than one quarter of one brake-horse power and slip ring motors of brake-horse power not exceeding 100 but not less than one brake-horse power; excluding flame proof motors and variable speed commutator motors.

[Paragraph 16.1]

(xxi) Protective duty should be levied at the rate of 20 per cent ad valorem for a further period of three years, i.e., up to 31st December, 1958, on component parts of electric motors specified in (xx) above, but excluding control gear for the same, provided that only such articles should be deemed to be component parts as are essential for the working of the electric motors and have been given for that purpose some special shape or quality which could not be essential for their use for any other purpose.

[Paragraph 16.2]

(xxii) So long as import control has to be maintained on balance of payments grounds, Government should give due consideration to such factors as the capacity of the indigenous industry, its production and the demand in the country in regulating imports of electric motors.

[Paragraph 17.2]

19. *Acknowledgements.*—We wish to express our thanks to the manufacturers, importers and consumers of electric motors, and the Associations who furnished us with detailed information and their representatives who gave evidence before us. We also wish to thank Shri P. N. Deobhakta, Deputy Development Officer in the Development Wing of the Ministry of Commerce and Industry for his valuable assistance in connection with this inquiry.

M. D. BHAT, *Chairman.*

B. N. DAS GUPTA, *Member.*

C. RAMASUBBAN, *Member.*

S. K. BOSE, *Secretary.*

*Bombay,*

*Dated 23rd March, 1955.*

## APPENDIX I

[vide paragraph 3]

## LIST OF PERSONS OR BODIES TO WHOM COMMISSION'S QUESTIONNAIRES WERE ISSUED AND FROM WHOM REPLIES OR MEMORANDA WERE RECEIVED.

(\*indicates reply received.)

*Producers*

1. Argus Engineering Co. Ltd., Peelamedu Post, Coimbatore.
- \*2. Associated Electrical Industries Manufacturing Co., Ltd.,  
1, Taratalla Road, Garden Reach P.O., Calcutta—24.
- \*3. Bharat Bijlee Limited, Udyog Nagar, Bombay—22.
- \*4. British India Electric Construction Co. Ltd., 21, Netaji  
Subhas Road, Calcutta—1.
- \*5. Crompton Parkinson (Works) Ltd., Haines Road, Worli,  
Bombay—18.
- \*6. Eastern Electric Co., Ltd., Singanallur Post, Coimbatore.
- \*7. Electrical Construction and Equipment Co. Ltd., 35,  
Chittaranjan Avenue, Calcutta—12.
8. 'GB' Works Ltd., Mahesh, Rishra P.O., Hooghly.
- \*9. General Electric Company of India (Manufacturing) Ltd.,  
58, Taratalla Road, Garden Reach, Calcutta—24.
10. Hindustan Electric Co., Ltd., Graham Road, Ballard Estate,  
Bombay—1.
- \*11. Government Electric Factory, Bangalore—3.
12. India Electric Works, 31, Dharamtalla Street, Calcutta.
13. Indian Reconstruction Ltd., Post Box No. 254, Kanpur.
14. Jai Kishan Das Esq., Ivory Palace, Cannaught Place, New  
Delhi.
- \*15. Jyoti Ltd., Baroda—3.
- \*16. Kirloskar Electric Co., Ltd., 460/2, 18th Cross, Malleswa-  
ram, Bangalore—3.
17. Kaycee Industries Ltd., Kamani Chambers, Ballard Estate,  
Bombay—1.
- \*18. Machinery and Industries (India) Ltd., Strand Road, P.O.  
Burashibtala, Chinsurah, West Bengal.
- \*19. Metropole Works, Amritsar.
- \*20. National Electrical Industries Ltd., Industrial Estate,  
Lalbaug, Bombay—12.



21. Nagarmall Esqr., 8 Royal Exchange Place, Calcutta.
22. New India Electric Corporation, 21, Harvey Road, Gamdevi, Bombay—7.
23. P.S.G. and Sons' Charity Industrial Institute, Peelamedu Post, Coimbatore.

#### *Association*

Indian Electrical Manufacturers' Association, 35, Stephen House, Dalhousie Square East, Calcutta.

#### *Importers*

1. Ahmed A. Fazalbhoy Ltd., 41, Marine Lines, Bombay.
2. A.C.E.C. (India) Ltd., Mubarak Manzil, Apollo Street, Fort, Bombay.
3. American Electrical and Pumps Distributors, 4, Mission Row, Calcutta.
4. Asea Electric (India) Ltd., Yaffi Building, Goa Street, Bombay—1.
5. Asea Electric (India) Ltd., 4, Lyon's Range, Calcutta.
- \*6. English Electric Co. Ltd., 249, Dadabhoy Naoroji Road, Bombay 1.
7. Ashok Engineering Co., 24, Noble Chambers, Parsi Bazar Street, Bombay-1.
8. Ashok Exporters & Importers, P. 22, Swallow Lane, Calcutta.
9. Asia United Traders & Industries Ltd., 40, Mission Row, Calcutta.
10. A. S. Jayant and Co., 158, E, Dharamtalla Street, Calcutta.
- \*11. Associated Electrical Industries (India) Ltd., Crown House, 6, Mission Row, Calcutta.
- \*12. Balmer Lawrie and Co. (India) Ltd., 6, Graham Road, Ballard Estate, Bombay-1.
13. Basan Pran and Co. Ltd., 9, Old Court House Street, Calcutta.
- \*14. Batliboi and Co., Forbes Street, Bombay.
15. Binny and Co. (Madras) Ltd., 7, Armenian Street, Madras.
- \*16. British Eletrical and Pumps Ltd., 1/IB, Mission Row, Calcutta.
17. British Engineering Co., 105, Lohar Chawl, Bombay.
18. Chaturbhuj Jivandas and Co., 158, Lohar Chawl, Bombay.

- \*19. Chemicals and Machinery Ltd., Hamam Street, Bombay—1.
- \*20. Crompton Engineering Co. (Madras) Ltd., P.B. 205, Second Line Breach, Madras.
- 21. Dodge and Seymour (India) Ltd., Luxmi Building, Ballard Estate, Bombay—1.
- \*22. East Asiatic Co. (India) Ltd., F-2, Clive Building, Netaji Subhas Road, Calcutta.
- 23. East Asiatic Co. (India) Ltd., Shreenivas House, Waudby Road, Bombay.
- 24. Eastern Electric and Engineering Co., 127, Mahatma Gandhi Road, Bombay—1.
- 25. Eastern Electrical Co. Ltd., Coimbatore, S. India.
- \*26. Easun Engineering Co., Ltd., 5—7, Second Line Beach, Madras—1.
- 27. Electric Cable and Machinery Co., Ltd., 45/47. Forbes Street, Bombay—1.
- 28. Electric General Traders Ltd., Bombay Mutual Annexe, Bombay.
- 29. Engineering and Agencies, Escond House, 1st Pasta Lane, Colaba, Bombay.
- \*30. English Electric Co. Ltd., D—3, Clive Buildings, Netaji Subhas Road, Calcutta.
- 31. Escorts (Agents) Ltd., Cannaught Circus, New Delhi.
- \*32. F. and C. Osler (India) Ltd., 12, Old Court House Street, Calcutta.
- 33. Forward Engineering Co., Round Temple, Bombay.
- \*34. General Electric Co. (India) Ltd., Magnet House, Calcutta.
- 35. General Motors India Ltd., Post Box No., 39, Sewree, Bombay.
- 36. General Radio and Appliances Ltd., 16, New Queens Road, Bombay.
- 37. Girdhari Lal and Co., 16, Apollo Street, Bombay—1.
- 38. Gorakhram Gokalchand, Choksey Chambers Building, Zaveri Bazar, Bombay.
- 39. Gordon Woodroffe and Co. (Madras) Ltd., G. T. Road, Madras.
- \*40. Govindram Bros., Ltd., 139, Meadows Street, Bombay—1.
- 41. Greaves Cotton and Crompton Parkinson Ltd., 1, Forbes Street, Bombay.
- 42. Hardcastle Waud and Co., Ltd., Alice Building, Dadabhai Naoroji Road, Bombay.

43. **Havelis' Electric (Sales) Corporation, P. B. No. 238, 59, Forbes Street, Bombay.**
44. Hindustan Electric Co., Ltd., Thackersy House, Ballard Estate, Bombay—1.
45. Hindustan Equipment Supplies Ltd., 45—47, Apollo Street, Bombay—1.
- \*46. Hindustan Export and Import Corporation, 207, Hornby Road, Bombay—1.
47. Importers and Mfrs. Ltd., Broach Street, Dana Bunder, Bombay.
48. Indo-European Trading Agencies, Sir P. M. Road, Bombay—1.
49. Ingersoll—Rand (India) Ltd., Devkaran Nanji Building, Horniman Circle, Bombay.
50. International Electric Corporation, 44, Forbes Street, Bombay.
51. Jayems Engineering Co., Warden House, Sir P. M. Road, Bombay.
52. Jessop and Co., Ltd., 93, Netaji Subhas Road, Calcutta—1.
- \*53. Jhangianis Ltd., Bombay Mutual Annexe, Gunbow Street, Bombay.
54. Jost's Engineering Co., Ltd., Great Social Building, Sir P. M. Road, Bombay.
55. J. P. Jamnadas and Co., Near Resham Bazar, Bombay.
56. J. Ranchhodadas Shah and Co., Kirti Building, Forbes Street, Bombay.
57. Kaycee Industries Ltd., Asian Building, Ballard Estate, Bombay—1.
58. Kesho Ltd., 434, Sandhurst Bridge, Bombay.
59. Kilburn and Co., Ltd., Post Box No. 61, Calcutta.
60. Lachwani and Co., Allana Compound, Lamington Road. (North), Bombay—7.
61. Larsen and Toubro Ltd., Post Box No. 2781, Bombay.
62. Lilaram Kewalram and Sons, Kalbadevi Road, Bombay—2.
63. Mahansa Horland Engineering Co., Ltd., Bank Street, Calcutta.
64. Mahindra and Mahindra Ltd., Gateway Building, Apollo Bunder, Bombay—1.
65. Marshal Sons and Co. (India) Ltd., 9, Second Line Beach, Madras.
66. Mata Lachmi Company, Nanbhai Lane, Fort, Bombay.
- \*67. Mather and Platt Ltd., Hamilton House, 8, Graham Road, Ballard Estate, Bombay—1.

68. Mill Stores Co., 43, Nagdevi Cross Lane, Bombay—2.
69. Mill Stores Trading Co. of India Ltd., 79/91, Apollo Street, Bombay—1.
- \*70. Modi and Modi, Linghi Chetty Street, Madras—1.
71. Mahindra Holland Engineering Co. Ltd., Hall and Anderson Building, Park Street, Calcutta.
72. Moussel and Co., 41.A, Free School Street, Calcutta.
73. Parry and Co., Post Box No. 12, Madras.
74. Patel Electric Co., Ltd., Lohar Chawl, Bombay.
- \*75. Pednekar and Co., Ltd., 172, Girgaum Road, Bombay—4.
76. Power Tool and Appliances Ltd., 2, Dalhousie Square East, Calcutta.
77. Protos Engineering Co., Ltd., Thaker Nivas, Sir Jamshedji Tata Road, Bombay.
- \*78. Refrigerators (India) Ltd., 59-C, Park Street, Calcutta.
- \*79. R. S. Mehta and Co. Ltd., Medows Street, Calcutta.
80. Seeyansee and Co., 55, Anderson Street, Madras—1.
81. Seth Laxman Prasad and Sons, Shorewali Kothi, Jamna Road, Agra.
82. Shree Industrial and Commercial Syndicate, 198, Jameshdji Tata Road, Bombay.
- \*83. Singer Sewing Machine Co., 207, Hornby Road, Bombay—1.
84. Somani and Co., Ltd., Medows Street, Bombay.
85. South India Corp. (Madras) Ltd., 2, Armenian Street, Madras.
86. Standard Machine Co., 1, Victoria Road, Bombay.
87. The United Eastern General Eng. Co., Sri Sadan, Trichi Road, Coimbatore.
88. United Equipment and Stores Ltd., P. 12, Mission Row, Calcutta.
89. Universal India Ltd., 27/33, Medows Street, Bombay.
90. Volkart Brothers, Graham Road, Ballard Estate, Bombay.
91. William Jacks and Co., Ltd., 16, Netaji Subhas Road, Post Box 369, Calcutta—1.

#### *Consumers*

- \*1. Ahmedabad Millowners' Association, Lal Darwaja. Post Box No. 7, Ahmedabad.

2. Asea Electric India Ltd., Yaffi Building, Ballard Estate, Bombay.
3. Ashok Engineering Co., Noble Chambers, Parsi Bazar Street, Bombay—1.
4. Atlas Cycle Industries Ltd., Sonapat (Near Delhi).
5. Eastern Electrical Co. Ltd., Coimbatore.
6. Eastern Electric and Engineering Co., 127, Mahatma Gandhi Road, Bombay—1.
- \*7. Firestone Rubber and Tyre Co. of India Ltd., Hay Bunder Road, Sewree, Bombay.
- \*8. Greaves Cotton and Crompton Parkinson Ltd., 1, Forbes Street, Bombay—1.
9. Hindustan Construction Co. Ltd., Construction Building, Ballard Estate, Bombay.
- \*10. Indian Oxygen and Acetylene Co. Ltd., Ghatkoper, Bombay.
11. Kaycee Industries Ltd., Asian Building, Ballard Estate, Bombay.
- \*12. Laxmiratan Cotton Mills Co. Ltd., Behari Niwas, Kanpur.
13. Shree Sadul Textiles Ltd., Sri Ganganagar (N. Rly.), Rajasthan.
14. Shri Krishna Ginning and Processing Oil Mills, Bhannana Purwa, Kalpi Road, Kanpur.
15. Shri Uma Shankar Sharma, Moholla-Barahi, Hapur (U.P.).
- \*16. The Supercraft Ltd., C/o. Power, Tools and Appliances Co. Ltd., 2, Dalhousie Square, Calcutta.
- \*17. Tata Chemicals, Ltd., Bombay House, Bruce Street, Bombay.
- \*18. Tata Oil Mills Ltd., Bombay House, Bruce Street, Bombay.
19. Trilok Chand and Sons, Ltd., Laxmi Building, The Mall, Kanpur.
20. Vidarbha Mills (Berar) Ltd., Ellichpur (Berar).
- \*21. Walchandnagar Industries Ltd., Walchandnagar Post, Poona District.
- \*22. Western India Spinning and Mfg. Co. Ltd., Chinchpokli, Bombay.

## APPENDIX II

[Vide paragraph 3]

LIST OF PERSONS WHO ATTENDED THE COMMISSION'S PUBLIC INQUIRY ON  
21ST AND 22ND DECEMBER, 1954.

### Producers

1. Shri N. W. Gurjar	}	Representing	Kirloskar Electric Co. Ltd.,
2. Shri J. N. Gurjar			460/2, 18th Cross, Malles-
3. Shri K. G. Chandra-			waram, Bangalore.
4. Shri P. R. Deshpande			„
5. Shri V. V. Dhumen			Crompton Parkinson (Works)
6. Mr. C. Hardwic			Limited, Haines Road,
7. Mr. J. Carey-Brown			Worli, Bombay—18.
		„	Associated Electrical In-
			dustries (India) Ltd., Crown
			House, 6, Mission Row,
			Calcutta—1.
8. Mr. R. A. Allan	.	„	G. E. C. of India (Manufac-
			turing) Ltd., 58, Taratalla
			Road, Garden Reach, Cal-
			cutta—24.
9. Shri J. S. Zaveri	}	„	Bharat Bijlee Ltd., Udyog
10. R. A. Shah		„	Nagar, Sion, Bombay—22.
11. Shri W. P. Karnik		„	National Electrical Indus-
12. Shri B. S. Bhagwat		„	tries Ltd., The Industrial
			Estate, Lalbaugh, Bombay
			12.
13. Shri N. Krishnan	.	„	British India Electric Con-
			struction Co. Ltd., 21, Netaji
			Subhas Road, Calcutta 1.
14. Shri V. B. Pathak	.	„	Jyoti Ltd., Baroda 3.
15. Shri V. Srinivasa Rao	.	„	Government Electric Factory
			Mysore Road, Bangalore 2.
16. Shri D. K. Sinha	.	„	Indian Electrical Manufac-
			turers' Association, 35,
			Stephen House, Dalhousie
			Square, Calcutta 1.

### Suppliers of Raw Materials

1. Shri R. D. Periwal	}	Representing	National Bearing Co. Ltd.,
2. Mr. G. W. Golding			Jaipur, (Rajasthan).
3. Shri P. D. Bhaiya			„
4. Shri K. C. Maitra			Sankey Electrical Stampings
5. Shri V. S. Deshpande			Ltd., Bhandup, Bombay.
6. Mr. A. R. Driessen			Indian Cable Co. Ltd., 9,
7. Shri A. B. Bilimoria			Hare Street, Calcutta, 1.
8. Shri T. S. Sitapati			National Insulated Cable
			Co. of India Ltd., Stephen
			House, 4, Dalhousie Square,
			East Calcutta 1.

- |                    |              |   |
|--------------------|--------------|---|
| 9. Shri S. S. Vaze | Representing | Tata Iron & Steel Co. Ltd.<br>Bombay.                         |
| 10. M. R. A. Binns | „            | Guest Keen Williams Ltd.<br>41, Chowringhee Road Calcutta 16. |

*Importers*

- |                    |   |  |
|--------------------|---|--|
| 1. Mr. C. W. Amos  | „ | English Electric Co. Ltd.,<br>Eruchshaw Building 249,<br>Dr. Dadabhoy Naoroji Road,<br>Bombay 1. |
| 2. Shri M. N. Shah | „ | Batliboi & Co., Forbes Street,<br>Bombay 1.  |

*Consumers*

- |                          |   |   |
|--------------------------|---|---|
| 1. Shri K. S. Kuka       | „ | Tata Iron & Steel Co. Ltd.,<br>Bombay House, Bruce Street,<br>Bombay 1. |
| 2. Shri S. A. Prabhune   | „ | Tata Chemicals Ltd., Bombay<br>House, Bruce Street, Bom-<br>bay 1.      |
| 3. Shri M. V. A. Iyengar | „ | Tata Oil Mills Co. Ltd.,<br>Bombay House, Bruce Bom-<br>bay 1.          |

*Government Departments*

- |                             |   |  |
|-----------------------------|---|--|
| 1. Shri P. N. Deobhakta     | „ | Ministry of Commerce and<br>Industry, Development<br>wing, (Electrical Engineer-<br>ing Directorate) Shah-<br>jahan Road, New Delhi. |
| 2. Shri P. T. Sipahimalani. | „ | Directorate General of Sup-<br>plies & Disposal, Engg.<br>Stores Directorate, Shah<br>jahan Road, New Delhi.                         |
| 3. Shri N. K. Biswas        | „ | Director of Industries, West<br>Bengal.  |
| 4. Shri V. V. Apte          | „ | Director of Industries &<br>Statistics Authority, Old<br>Customs House Yard Bom-<br>bay 1.   |
| 5. Shri V. R. Gupte         | „ | Collector of Customs, Cus-<br>toms House, Bombay.  |

[Vide paragraph 7(2) ]

*Statement showing imports of electric motors from January, 1951 to September, 1954.*

[illegible]



## APPENDIX IV

(vide paragraph 13)

statement showing c.i.f. prices and landed costs of Electric Motors : A. C.—3 Phase, 50 Cycles, 400/440 Volts.

Sl. No.	Source of information	Country of consignment	Date of import	Type and Specification	H.P.	Speed R. P. M.	C. I. F. price per motor	Landed cost per motor	Remarks
1	2	3	4	5	6	7	8	9	10
				A. Squirrel Cage Induction Motors					
1	General Electrical Co. of India Ltd., Calcutta.	U.K.		Squirrel cage, screen protected drip proof.	1	1,150	161	182	
		"		Do.	2	"	190	214	
		"		Do.	3	"	218	246	
		"		Do.	5	"	280	316	
		"		Do.	7.5	"	340	385	
		"		Do.	10	"	418	472	
		"		Do.	15	"	547	618	
		"		Do.	20	"	763	860	
		"		Squirrel cage totally enclosed fan cooled.	3	"	323	383	Based on the works' prices of G. E. C. in U. K.
		"		Do.	5	"	323	383	
		"		Do.	7.5	"	413	467	
		"		Do.	10	"	507	574	
		"		Do.	15	"	708	802	
		"		Do.	20	"	1,007	1,140	
		"		Do.	25	"	1,202	1,296	

1 2 3 4 5 6 7 8 9 10

2	Collector of Customs, Calcutta.	U.K.	1954	Totally enclosed fan cooled.	5	Rated in accordance with B. S. S. 168/1936.	323	366	
3	English Electric Co. Ltd., Calcutta.	"	"	Do.	10	Do.	480	543	
4	Collector of Customs, Calcutta.	"	14-1-54	Do.	15	1455	1,237	1,380	
		"	1954	Do.	20	Rated in accordance with B.S.S. 168/1936.	875	991	
1	G. E. C. (India) Ltd., Calcutta.	U.K.	1954	Screen protected fan cooled	5	1450	622	671	
2	Crompton Engineering Co. Ltd., Madras.	"	28-2-53	Do.	5	1440	1,221	1,299	
3	G.E. C. (India) Ltd., Calcutta.	"	1954	Screen protected	15	1450	1,006	1,086	
4	Collector of Customs, Calcutta.	"	1954	Do.	20	..	1,400	1,510	Rated as per B.S.S. 168/1936.
5	Batliboi & Co., Bombay.	"	..	Screen protected	25	1435	1,031	1,111	Based on the latest list prices of Higgs Motors.
	Do.	"	..	Do.	50	1440	1,622	1,748	

I 2 3 4 5 6 7 8 9 10

6	G. E. C. (India) Ltd., Calcutta.	U.K.	1954	Screen Protected	25	1450	1,370	1,479	Rated as per B. S. S. 168/1936.
	Do.	"	1954	Totally enclosed fan cooled.	50	1450	3,811	4,111	
7	Collector of Customs, Calcutta.	"	1954	Screen protected drip proof.	50	..	2,460	2,654	Rated as per B. S. S. 168/1936.
8	Crompton Engineering Co. Ltd., Madras.	"	20-4-54	Screen protected drip proof.	60	1440	2,790	2,945	
9	G.E.C.(India) Ltd., Calcutta.	"	..	Screen protected	3	1450	559	603	Based on the works' price of G. E. C in U. K.
	Do.	"	..	Do.	10	"	827	893	
	Do.	"	..	Do.	20	"	1,192	1,287	
	Do.	"	..	Do.	40	"	1,695	1,835	
10	Barlibol & Co., Bombay.	U.K.	..	C. Loom Motors. Higgs 3 phase loom motor.	3/4	930	224	251	
	Do.	"	..	Do.	1	"	238	266	



सत्यमेव जयते